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Indian Standard

METHODS FOR SAMPLING OF COTTON — BALES, SLIVERS AND ROVINGS

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Indian Standard
METHODS FOR SAMPLING OF COTTON — BALES, SLIVERS AND ROVINGS

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Indian Standard
METHODS FOR SAMPLING OF COTTON—BALES, SLIVERS AND ROVINGS

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 30 December 1968, after the draft finalized by the Sampling Methods Sectional Committee had been approved by the Textile Division Council.

0.2 Evaluation of the quality of cotton is very important for the production of cotton yarn and fabrics. While formulating standards on methods of tests for cotton fibres, the Textile Standards Sectional Committee felt the need for formulating objective procedures for drawing the samples of cotton from bales, slivers and rovings. For this purpose information was collected from the different textile mills and research organizations in the country and inherent variability of various characteristics ascertained. This information has been utilized for arriving at the scales of sampling and methods for drawing the sample recommended in this standard.

0.3 This standard is one of the series of Indian Standards relating to the sampling of textile materials. Other standards published so far in the series are:

IS : 3919-1966 Methods for sampling cotton fabrics for determination of physical characteristics

IS : 3920-1966 Methods for sampling of cotton yarn for determination of physical characteristics

0.4 In reporting the result of a test or analysis made in accordance with this standard, if the final value, observed or calculated, is to be rounded off, it shall be done in accordance with IS : 2-1960*.

1. SCOPE

1.1 This standard specifies the methods for sampling of cotton from bales or from the processed material in the form of sliver or roving.

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*Rules for rounding off numerical values (*revised*).

2. TERMINOLOGY

2.0 For the purpose of this standard, the following definitions shall apply.

2.1 Bale — A compressed package of cotton in a form convenient for transit.

2.2 Gross Sample — The aggregate of all tufts or lumps selected from a lot.

2.3 Lot

2.3.1 *Bales* — All the bales of cotton of the same variety and quality delivered to a buyer against a despatch note.

2.3.2 *Slivers or Rovings* — The quantity of sliver or roving processed from the same raw material.

2.4 Roving — A continuous, slightly twisted strand of fibres from which yarn is spun.

2.5 Sliver — An assemblage of a continuous strand of fibres without twist.

2.6 Test Sample — A small representative quantity of the material selected from a gross sample for the purpose of testing.

3. SAMPLING FROM BALES

3.1 In order to obtain a representative sample from a lot of bales it is necessary to distribute the sample to be selected over the bales in the lot and different layers in the bale.

3.1.1 Unless otherwise agreed to between the buyer and the seller, the number of bales to be selected at random from a lot shall be in accordance with Table 1. To ensure the randomness of selection of the bales, IS : 4905 - 1968* may be used.

3.2 From each of the bales so selected, the representative material may be drawn in accordance with **3.2.1** or **3.2.2**.

3.2.1 In view of the variation observed in most of the fibre properties, both within and between the layers of cotton in a bale, it is desirable to open the bale and draw tufts from different positions in at least 10 equally-spaced layers. In practice the selection of the layers from a bale may be done according to **3.2.1.1**.

3.2.1.1 The bale is kept lengthwise on the ground and the hoops are broken. A thin layer of cotton is removed from the top and the tufts are drawn from various positions on the exposed surface. Then a thick slab (about one-tenth the height of the bale) is removed and the tufts are drawn from the newly exposed surface. The procedure is repeated till the tufts are drawn from at least 10 layers. The procedure is indicated diagrammatically in Fig. 1. While drawing the tufts from various layers, care shall be taken to avoid any bias in selecting the positions for drawing the tufts. The material so drawn from the bale shall not be less than 2 kg.

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*Methods for random sampling.

TABLE 1 NUMBER OF BALES TO BE SELECTED FORM A LOT

(*Clause* 3.1.1)

No. of Bales in the Lot	No. of Bales to be Selected
Up to 50	2
51 ,, 100	4
101 ,, 150	7
151 ,, 300	13
301 ,, 500	20
501 ,, 1 000	32
1 001 and above	40

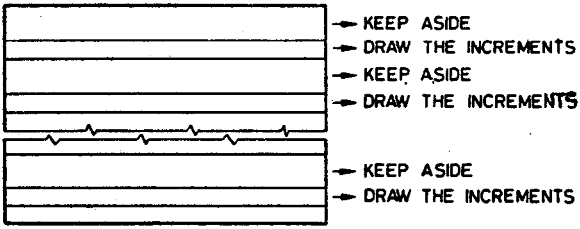

Fig. 1 Selection of Layers from a Bale

3.2.2 In case it is not economical to open the bale completely, the gross sample may be obtained by breaking one or more of the hoops round the bale and then taking out a lump of at least 1 kg of material from each of the two exposed sides of the bale. The material so taken shall include portions from the hard, soft and middle parts of the bale.

3.3 The material so obtained from all the bales selected from the lot shall be thoroughly mixed to get a gross sample.

4. REDUCTION OF GROSS SAMPLE

4.0 The procedure as given in **4.1** and **4.2** may be followed for obtaining the test sample from the gross sample.

4.1 The gross sample shall be spread out evenly on a level ground in the form of either a square with each side slightly greater than 1 m, or in the case of a larger sample, a rectangle with the shorter side slightly greater than 1 m and the larger side slightly greater than 2 m. A suitable framework of size 1 × 1 m with 25 sub-squares or 1 × 2 m with 50 sub-squares shall be placed on the material so spread. From each of these sub-squares, one or more tufts of fibres shall be pulled out at random, taking care not to exercise and bias in favour of or against any particular place within a sub-square, and that tufts drawn from each sub-square weigh about 4 g in the former case and about 2 g in the latter case. The quantity of cotton thus drawn shall constitute the reduced sample.

4.2 The reduced sample shall be well mixed and divided into 25 or 50 approximately equal parts. From each of these parts, one or more tufts of fibres shall be extracted at random, taking care that the fibres drawn are nearly equal in weight, and the total weight of fibres thus drawn is not less than the quantity required for relevant tests. The material so taken out shall constitute the test sample.

4.3 If so agreed between the buyer and the seller, three test samples may be prepared, one for the buyer, another for the seller and the third for the referee, to be used in case of dispute between the two. These test samples may then be simultaneously drawn from the reduced sample by following the procedure given in **4.2**.

5. SAMPLING OF SLIVERS AND ROVINGS

5.1 Sometimes it may be necessary to draw the representative sample from the processed material in the form of sliver or roving. In order to obtain a representative sample from the lot, it is necessary to distribute the sample to be selected over the cans or packages in the lots.

5.2 The number of cans or packages selected at random from a lot for this purpose shall be in accordance with Table 2. To ensure randomness of selection of cans or packages IS : 4905 - 1968* may be used.

5.3 From each can or package selected according to **5.1**, at least 1 m of sliver or 5 m roving shall be taken. The portions collected from all such cans or packages shall constitute the gross sample.

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*Methods for random sampling.

TABLE 2 NUMBER OF CANS OR PACKAGES TO BE SELECTED FROM A LOT

(*Clause* 5.2)

No. of Cans or Packages in the Lot	No. of Cans or Packages to be Selected
Up to 50	2
51 „ 150	3
151 „ 300	5
301 „ 500	8
501 and above	13

5.4 The portions of slivers in the gross sample shall be opened up and thoroughly mixed and then reduced by following the method given in **4** to get the test sample(s).

6. NUMBER OF TESTS AND REPORTING

6.1 The preparation of the test specimens, the number of test specimens to be tested for determination of various characteristics and the method for reporting the test results shall be according to relevant standards on the methods of test.

INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

Quantity	*Unit*	*Symbol*
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

Quantity	*Unit*	*Symbol*
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

Quantity	*Unit*	*Symbol*	*Conversion*
Force	newton	N	1 N = 1 kg.1 m/s^2
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m^2
Frequency	hertz	Hz	1 Hz = 1 c/s (s^{-1})
Electric conductance	siemens	S	1 S = 1 A/V
Pressure, stress	pascal	Pa	1 Pa = 1 N/m^2

INDIAN STANDARDS INSTITUTION

Manak Bhavan, 9 Bahadur Shah Zafar Marg, NEW DELHI 110002

Telephone : 27 01 31 (20 lines) **Telegrams : Manaksanstha**

Regional Offices:

			Telephone
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